सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

Qualification Pack

CNC PROGRAMMER -TOOL ROOM

QP Code: MSME/CSC/Q0401

Version: 1.0

NSQF Level: 4.5

MSME TECHNOLOGY CENTRE ||
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Contents

Qualification Pack

MSME/CSC/Q0401: CNC PROGRAMMER -TOOL ROOM

Brief Job Description

This is an Advance Diploma programme in which students tend to get excellent career opportunities in the field of CNC and To upgrade professional skills of the learner to deal with technological change .Learners who attain this qualification are competent in CNC programming for manufacturing sector. Qualified learners are competent to get an employment in Engineering/ Manufacturing industries as per the requirement of MSMEs. Qualified learners will become an entrepreneur

Personal Attributes

This is an Advance Diploma programme in which students tend to get excellent career opportunities in the field of CNC

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. MSME/CSC/N0404: Check and Inspect dimensions of machined Part using various Measuring instrument
2. MSME/CSC/N0403: Create, Generate and Execute CNC Program for Manufacturing Process
3. MSME/CSC/N0402: Read, Interpret and Create Part Drawing using Auto-CAD
4. MSME/CSC/N0401: Understand the Concept of Production Process
5. MSME/CSC/N0405: Employability skills

Qualification Pack (QP) Parameters

Sector	Capital Goods
Sub-Sector	Machine Tools
Occupation	PROGRAMMING
Country	India
NSQF Level	4.5
Credits	20

Qualification Pack

Aligned to NCO/ISCO/ISIC Code	7223.6002 CNC Operator - Turning
Minimum Educational Qualification & Experience	Completed 3 year diploma after 10th with NA of experience OR Certificate-NSQF (NSQF Level 4 in the field of CNC) with 1.5 years of experience OR Certificate-NSQF (NSQF Level 3.5 in the field of CNC) with 3 Years of experience OR 12th Class/I.T.I (2 year ITI in relevant Trade*) with 1 Year of experience
Minimum Level of Education for Training in School	10th Class
Pre-Requisite License or Training	NA
Minimum Job Entry Age	17 Years
Last Reviewed On	NA
Next Review Date	30/04/2027
NSQC Approval Date	30/04/2024
Version	1.0
Reference code on NQR	NQR Code: QG-4.5-CG-02403-2024-V1-MSME
NQR Version	1.0

MSME/CSC/N0404: Check and Inspect dimensions of machined Part using various Measuring instrument

Description

After completion of course Student should be able to Understand End and line Standard

Scope

The scope covers the following :

- After completion of course Student should be able to Understand End and line Standard

Elements and Performance Criteria

MSME/ADCNC/04 Check and Inspect dimensions of machined Part using various Measuring instrument

To be competent, the user/individual on the job must be able to:

PC1. Describe significance of measurement and types of measurements.

PC2. Explain how to do standardization of the measuring instruments.

PC3. Explain types of gauges & Compare the gauges

PC4. Use the gauges for checking the machined parts

PC5. Explain Telescopic gauge, slip gauge, standard wire gauge.

PC6. Check the hole diameter and wire diameter using telescopic gauge and wire gauge respectively..

PC7. Describe Limit gauge: plug gauge, thread plug gauge, snap gauge with sketch.

PC8. Do inspection of a hole and internal thread using plug gauge and thread plug gauge.

PC9. Describe Ring gauge, thread ring gauge with sketch.

PC10. Check the size of a shaft and threaded shaft using ring gauge and thread ring gauge.

PC11. Inspect the given job using CMM.

PC12. Use height master and profile projector for the measurement.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ADCNC/04 Check and Inspect dimensions of machined Part using various Measuring instrument	-	**100**	-	-
PC1. Describe significance of measurement and types of measurements.	-	-	-	-
PC2. Explain how to do standardization of the measuring instruments.	-	-	-	-
PC3. Explain types of gauges & Compare the gauges	-	-	-	-
PC4. Use the gauges for checking the machined parts	-	-	-	-
PC5. Explain Telescopic gauge, slip gauge, standard wire gauge.	-	-	-	-
PC6. Check the hole diameter and wire diameter using telescopic gauge and wire gauge respectively..	-	-	-	-
PC7. Describe Limit gauge: plug gauge, thread plug gauge, snap gauge with sketch.	-	-	-	-
PC8. Do inspection of a hole and internal thread using plug gauge and thread plug gauge.	-	-	-	-
PC9. Describe Ring gauge, thread ring gauge with sketch.	-	-	-	-
PC10. Check the size of a shaft and threaded shaft using ring gauge and thread ring gauge.	-	-	-	-
PC11. Inspect the given job using CMM.	-	-	-	-
PC12. Use height master and profile projector for the measurement.	-	-	-	-
NOS Total	**-**	**100**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CSC/N0404
NOS Name	Check and Inspect dimensions of machined Part using various Measuring instrument
Sector	Capital Goods
Sub-Sector	
Occupation	PROGRAMMING
NSQF Level	4.5
Credits	1
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

MSME/CSC/N0403: Create, Generate and Execute CNC Program for Manufacturing Process

Description

After completion of course Student should be able to: Explain applications and advantages of CNC machines

Scope

The scope covers the following :

- After completion of course Student should be able to:
- Explain applications and advantages of CNC machines

Elements and Performance Criteria

MSME/ADCNC/03 Create, Generate and Execute CNC Program for Manufacturing Process

To be competent, the user/individual on the job must be able to:

PC1. Compare the conventional machines with CNC machines & Describe the codes and its function

PC2. Use codes and Write programmes& Do practice on CNC by using G-codes and M-codes.

PC3. Write a programme for Chamfer, circular movement, label setting

PC4. write a program for contouring operation taking tool compensation by setting the label

PC5. Describe pocketing , polar movement, peck drilling, mirror cycle, datum shift in CNC programming

PC6. Do the pocketing practice of rectangular and circular type.

PC7. Use polar movement, peck drilling, mirror cycle, datum shift, and peck drilling cycle on the machine

PC8. Do practice on m-codes and g-codes for turning. & Run the cycle for rough turning, facing, chamfering.

PC9. Write codes for grooving and peck drilling and threading

PC10. Demonstrate grooving and peck drilling and threading (internal & external)

PC11. Do practice by running the machine using sub-programme for boring, centre drilling

PC12. Describe CAM technology & Explain the benefits of CAM & Identify the toolbar and use functional key.

PC13. • Describe line , rectangle , rectangle shape, circle & arc, fillet ,fillet chain, chamfer , chamfer chain ,
• polygon , ellipse & Use the icon for the required command to draw the assigned geometry

PC14. • Describe translate, mirror, rotate, trim, spline, scale, move to origin, offset, offset contour, rectangular
• array & Do the 2-D modeling by using the icons for different command

PC15. • Describe the purpose, function and procedure for letter, point, spiral, and helix, break two pieces, trim
• many joint entity, close arc, break many pieces, simplify. & Do modeling using these icons of MasterCAM

PC16. • Describe break at intersection, break circle, break drafting into line, convert to nurbs, modify spline, x
• hatch , dimension tools , dimension option , note.& Do modeling using these icons of Master-CAM.

PC17. Explain surface modeling, 3D Environment, & Describe the use of 3D tool bar, draft, extrude, fillet, trim

PC18. • Demonstrate introduction to surface modeling, 3D Environment, used of 3D tool bar, draft, extrude,
• fillet, trim.Create 3-D models using these icons.

PC19. • Describe the function of icons such as ruled / lofted, revolved, offset, swept & Generate 3-Dprofile using
• those icons

PC20. • Describe net surface, fence, extend, flat boundary, fill holes, remove boundary. Demonstrate split,
• untrim , 2 surface blend , 3 surface blend , 3fillet blend , project

PC21. Explain types of tool path, step to generate a tool path.

PC22. Describe use of machining tool bars.

PC23. Generate tool path using machining toolbar and other commands.

PC24. Do the machining using the options like 2-D countering, pocketing, 2-D drilling, etc

PC25. • Describe the function of the commands, surface rough (pocket , parallel , radial) surface finish (parallel
• , radial), flow line , contour , shallow , project , pencil.

PC26. Demonstrate the use of those commands and its use.

PC27. Do practice of generating the tool path and programmes for lathe operation.

PC28. • OJT Report:
• Mentioning the process and procedur carried by the trainee on daily basis for completing the assign task duly endorsed by
• the authorized personnel and The report must contain:
• □ Details of Department/ Organization
• □ Brief Job description
• □ Daily work activity
• □ Specific problem face if any with the solution.
• □ Technical Books referred during the OJT

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ADCNC/03 Create, Generate and Execute CNC Program for Manufacturing Process	-	100	-	-
PC1. Compare the conventional machines with CNC machines & Describe the codes and its function	-	-	-	-
PC2. Use codes and Write programmes& Do practice on CNC by using G-codes and M-codes.	-	-	-	-
PC3. Write a programme for Chamfer, circular movement, label setting	-	-	-	-
PC4. write a program for contouring operation taking tool compensation by setting the label	-	-	-	-
PC5. Describe pocketing , polar movement, peck drilling, mirror cycle, datum shift in CNC programming	-	-	-	-
PC6. Do the pocketing practice of rectangular and circular type.	-	-	-	-
PC7. Use polar movement, peck drilling, mirror cycle, datum shift, and peck drilling cycle on the machine	-	-	-	-
PC8. Do practice on m-codes and g-codes for turning. & Run the cycle for rough turning, facing, chamfering.	-	-	-	-
PC9. Write codes for grooving and peck drilling and threading	-	-	-	-
PC10. Demonstrate grooving and peck drilling and threading (internal & external)	-	-	-	-
PC11. Do practice by running the machine using sub-programme for boring, centre drilling	-	-	-	-
PC12. Describe CAM technology & Explain the benefits of CAM & Identify the toolbar and use functional key.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC13. • Describe line , rectangle , rectangle shape, circle & arc, fillet ,fillet chain, chamfer , chamfer chain , • polygon , ellipse & Use the icon for the required command to draw the assigned geometry	-	-	-	-
PC14. • Describe translate, mirror, rotate, trim, spline, scale, move to origin, offset, offset contour, rectangular • array & Do the 2-D modeling by using the icons for different command	-	-	-	-
PC15. • Describe the purpose, function and procedure for letter, point, spiral, and helix, break two pieces, trim • many joint entity, close arc, break many pieces, simplify. & Do modeling using these icons of MasterCAM	-	-	-	-
PC16. • Describe break at intersection, break circle, break drafting into line, convert to nurbs, modify spline, x • hatch , dimension tools , dimension option , note.& Do modeling using these icons of Master-CAM.	-	-	-	-
PC17. Explain surface modeling, 3D Environment, & Describe the use of 3D tool bar, draft, extrude, fillet, trim	-	-	-	-
PC18. • Demonstrate introduction to surface modeling, 3D Environment, used of 3D tool bar, draft, extrude, • fillet, trim.Create 3-D models using these icons.	-	-	-	-
PC19. • Describe the function of icons such as ruled / lofted, revolved, offset, swept & Generate 3-Dprofile using • those icons	-	-	-	-
PC20. • Describe net surface, fence, extend, flat boundary, fill holes, remove boundary. Demonstrate split, • untrim , 2 surface blend , 3 surface blend , 3fillet blend , project	-	-	-	-
PC21. Explain types of tool path, step to generate a tool path.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. Describe use of machining tool bars.	-	-	-	-
PC23. Generate tool path using machining toolbar and other commands.	-	-	-	-
PC24. Do the machining using the options like 2-D countering, pocketing, 2-D drilling, etc	-	-	-	-
PC25. • Describe the function of the commands, surface rough (pocket , parallel , radial) surface finish (parallel • , radial), flow line , contour , shallow , project , pencil.	-	-	-	-
PC26. Demonstrate the use of those commands and its use.	-	-	-	-
PC27. Do practice of generating the tool path and programmes for lathe operation.	-	-	-	-
PC28. • OJT Report: • Mentioning the process and procedur carried by the trainee on daily basis for completing the assign task duly endorsed by • the authorized personnel and The report must contain: • □ Details of Department/ Organization • □ Brief Job description • □ Daily work activity • □ Specific problem face if any with the solution. • □ Technical Books referred during the OJT	-	-	-	-
NOS Total	**-**	**100**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CSC/N0403
NOS Name	Create, Generate and Execute CNC Program for Manufacturing Process
Sector	Capital Goods
Sub-Sector	
Occupation	PROGRAMMING
NSQF Level	4.5
Credits	12
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

MSME/CSC/N0402: Read, Interpret and Create Part Drawing using Auto-CAD

Description

After completion of course Student should be able to Explain the application of engineering drawing.

Scope

The scope covers the following :

- After completion of course Student should be able to
- Explain the application of engineering drawing.

Elements and Performance Criteria

MSME/ADCNC/02 Read, Interpret and Create Part Drawing using AutoCAD

To be competent, the user/individual on the job must be able to:

PC1. Describe co-ordinate system used in CAD/CAM & Describe the CAD/CAM software.

PC2. Use auto-cad to draw geometry by co-ordinate system.

PC3. Describe the functions used in using AutoCAD software

PC4. Write the purpose of each function/mouse function, functional keys

PC5. Set the standard paper size in the AutoCAD.

PC6. Prepare the drawings in auto-cad by using limits, line, construction line, ray, trim, extend, erase.

PC7. Use commands to prepare the drawings- circle, rectangle, copy, move, offset, rotate.

PC8. Describe the purpose of array, mirror, scale, stretch, polyline, polygon, and arc.

PC9. Use commands array, mirror, scale, stretch, polyline, polygon, and arc.

PC10. Identify the proper commands and draw the given drawings in auto-cad.

PC11. • Describe the purpose of commands spline, ellipse, revision cloud, region, explode, join, break, break at a
• point.

PC12. Use the commands properly while drafting in Auto-CAD.

PC13. Describe point, point style, divide, measure, fillet, chamfer, blend curve

PC14. Use commands point, point style, divide, measure, fillet, chamfer, blend curve

PC15. Identify the proper commands and draw the given drawings in auto-cad.

PC16. Describe the commands hatch, gradient, details of sectional view.

PC17. Use/operate the commands hatch, gradient, details of sectional view.

PC18. Identify the commands for proper sectioning methods as per the material

PC19. Describe the commands text, mtext, text style, arc aligned text, mirror text

PC20. Use the commands text, mtext, text style, arc aligned text, mirror text

PC21. Use the commands for putting the text on the drawing.

PC22. • Draw the title block using those commands using auto-cad. & Provide dimension on the geometry by
• using auto-cad software

PC23. • Describe solid modeling, 3d environment & toolbars, extrude, revolve, Boolean operation, sweep, loft,
• press pull, 3d move, 3d rotate, 3d array, 3d align, solid editing toolbar, primitives.

PC24. • Prepare the solid model by using the commands in auto-cad and do the editing whenever it is necessary
• to modify.

PC25. Explain the types of plotters & Plot the drawing with the help of auto-cad software

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ADCNC/02 Read, Interpret and Create Part Drawing using AutoCAD	-	100	-	-
PC1. Describe co-ordinate system used in CAD/CAM & Describe the CAD/CAM software.	-	-	-	-
PC2. Use auto-cad to draw geometry by co-ordinate system.	-	-	-	-
PC3. Describe the functions used in using AutoCAD software	-	-	-	-
PC4. Write the purpose of each function/mouse function, functional keys	-	-	-	-
PC5. Set the standard paper size in the AutoCAD.	-	-	-	-
PC6. Prepare the drawings in auto-cad by using limits, line, construction line, ray, trim, extend, erase.	-	-	-	-
PC7. Use commands to prepare the drawings-circle, rectangle, copy, move, offset, rotate.	-	-	-	-
PC8. Describe the purpose of array, mirror, scale, stretch, polyline, polygon, and arc.	-	-	-	-
PC9. Use commands array, mirror, scale, stretch, polyline, polygon, and arc.	-	-	-	-
PC10. Identify the proper commands and draw the given drawings in auto-cad.	-	-	-	-
PC11. • Describe the purpose of commands spline, ellipse, revision cloud, region, explode, join, break, break at a • point.	-	-	-	-
PC12. Use the commands properly while drafting in Auto-CAD.	-	-	-	-
PC13. Describe point, point style, divide, measure, fillet, chamfer, blend curve	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. Use commands point, point style, divide, measure, fillet, chamfer, blend curve	-	-	-	-
PC15. Identify the proper commands and draw the given drawings in auto-cad.	-	-	-	-
PC16. Describe the commands hatch, gradient, details of sectional view.	-	-	-	-
PC17. Use/operate the commands hatch, gradient, details of sectional view.	-	-	-	-
PC18. Identify the commands for proper sectioning methods as per the material	-	-	-	-
PC19. Describe the commands text, mtext, text style, arc aligned text, mirror text	-	-	-	-
PC20. Use the commands text, mtext, text style, arc aligned text, mirror text	-	-	-	-
PC21. Use the commands for putting the text on the drawing.	-	-	-	-
PC22. • Draw the title block using those commands using auto-cad. & Provide dimension on the geometry by • using auto-cad software	-	-	-	-
PC23. • Describe solid modeling, 3d environment & toolbars, extrude, revolve, Boolean operation, sweep, loft, • press pull, 3d move, 3d rotate, 3d array, 3d align, solid editing toolbar, primitives.	-	-	-	-
PC24. • Prepare the solid model by using the commands in auto-cad and do the editing whenever it is necessary • to modify.	-	-	-	-
PC25. Explain the types of plotters & Plot the drawing with the help of auto-cad software	-	-	-	-
NOS Total	**-**	**100**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CSC/N0402
NOS Name	Read, Interpret and Create Part Drawing using Auto-CAD
Sector	Capital Goods
Sub-Sector	
Occupation	PROGRAMMING
NSQF Level	4.5
Credits	3
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

MSME/CSC/N0401: Understand the Concept of Production Process

Description

After completion of course Student should be able to: Understand about the basic norms of an organization

Scope

The scope covers the following :

- After completion of course Student should be able to:
- Understand about the basic norms of an organization

Elements and Performance Criteria

MSME/ADCNC/01 Understand the Concept of Production Process

To be competent, the user/individual on the job must be able to:

PC1. Describe safety rules.

PC2. Describe precautions to be taken for safety at work.

PC3. Explain the safety precautions required in the given set of work.

PC4. Explain the use of PPE while working in the workshop.

PC5. Describe the characteristics of the cutting tool materials.

PC6. Describe different types of materials used for cutting tools.

PC7. Identify tool materials and their properties.

PC8. Select tool material for the specific cutting tool application.

PC9. Explain &List different types of lathe machine w.r.t. its specifications.

PC10. Identify major parts and mechanism used in lathe

PC11. Explain the various lathe operation

PC12. Explain the parts and its function of milling machine.

PC13. Explain the parts and its function of grinding machine.

PC14. Explain engginering material with its type

PC15. • Descrive the various property of material such as Mechanical, Electrical, magnetic, Chemical, Optical,
• Physical.

PC16. • Describe mechanical property of material such as 1. Strength, 2.Elasticity, 3.Plasticity, 4.Stiffness,
• 5.Resilience, 6.Toughness, 7.Ductility, 8.Malleability, 9.Hardness. 10.Brittleness, 11.Creep and
• 12,Fatigue

PC17. Explain the Engineering application of Tool material

PC18. Describe Metals: ferrous &nonferrous.

PC19. Explain Ferrous materials: Contain Iron as base.

PC20. • Describe Ferrous Metals & their alloys extensively used in Metallurgical and mechanical Industries for
• shaping the products.

PC21. Nonferrous materials: Aluminum , Copper, Lead, Zinc, Tin , Nickel, Magnesium

PC22. Write the factors consider in selection of material

PC23. Compare ferrous material with non-ferrous material.

PC24. Identify the type of material (ferrous or non-ferrous)

PC25. Describe the use of iron: Pig Iron , wrought iron , cast iron.

PC26. Describe the use of Steel: low carbon, high carbon, medium carbon, Alloy Steel.

PC27. Describe the steel making process & iron carbon diagram.

PC28. Describe the purpose of heat treatment of steel .

PC29. • Explain the different heat treatment process such as Annealing, Stress relieving, Refining, Normalizing,
• Tempering and Hardening.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ADCNC/01 Understand the Concept of Production Process	**100**	**-**	**-**	**-**
PC1. Describe safety rules.	-	-	-	-
PC2. Describe precautions to be taken for safety at work.	-	-	-	-
PC3. Explain the safety precautions required in the given set of work.	-	-	-	-
PC4. Explain the use of PPE while working in the workshop.	-	-	-	-
PC5. Describe the characteristics of the cutting tool materials.	-	-	-	-
PC6. Describe different types of materials used for cutting tools.	-	-	-	-
PC7. Identify tool materials and their properties.	-	-	-	-
PC8. Select tool material for the specific cutting tool application.	-	-	-	-
PC9. Explain &List different types of lathe machine w.r.t. its specifications.	-	-	-	-
PC10. Identify major parts and mechanism used in lathe	-	-	-	-
PC11. Explain the various lathe operation	-	-	-	-
PC12. Explain the parts and its function of milling machine.	-	-	-	-
PC13. Explain the parts and its function of grinding machine.	-	-	-	-
PC14. Explain engginering material with its type	-	-	-	-
PC15. • Descrive the various property of material such as Mechanical, Electrical, magnetic, Chemical, Optical, • Physical.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC16. • Describe mechanical property of material such as 1. Strength, 2.Elasticity, 3.Plasticity, 4.Stiffness, • 5.Resilience, 6.Toughness, 7.Ductility, 8.Malleability, 9.Hardness. 10.Brittleness, 11.Creep and • 12,Fatigue	-	-	-	-
PC17. Explain the Engineering application of Tool material	-	-	-	-
PC18. Describe Metals: ferrous &nonferrous.	-	-	-	-
PC19. Explain Ferrous materials: Contain Iron as base.	-	-	-	-
PC20. • Describe Ferrous Metals & their alloys extensively used in Metallurgical and mechanical Industries for • shaping the products.	-	-	-	-
PC21. Nonferrous materials: Aluminum , Copper, Lead, Zinc, Tin , Nickel, Magnesium	-	-	-	-
PC22. Write the factors consider in selection of material	-	-	-	-
PC23. Compare ferrous material with non-ferrous material.	-	-	-	-
PC24. Identify the type of material (ferrous or non-ferrous)	-	-	-	-
PC25. Describe the use of iron: Pig Iron , wrought iron , cast iron.	-	-	-	-
PC26. Describe the use of Steel: low carbon, high carbon, medium carbon, Alloy Steel.	-	-	-	-
PC27. Describe the steel making process & iron carbon diagram.	-	-	-	-
PC28. Describe the purpose of heat treatment of steel .	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC29. • Explain the different heat treatment process such as Annealing, Stress relieving, Refining, Normalizing, • Tempering and Hardening.	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CSC/N0401
NOS Name	Understand the Concept of Production Process
Sector	Capital Goods
Sub-Sector	
Occupation	PROGRAMMING
NSQF Level	4.5
Credits	2
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

MSME/CSC/N0405: Employability skills

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- This unit is about employability skills, Constitutional values, becoming a professional in the 21st
- Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills,
- customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career
- development.

Elements and Performance Criteria

MSME/ES/02 Employability skills

To be competent, the user/individual on the job must be able to:

PC1. Explain occupational health and Safety.

PC2. Explain about safety rules.

PC3. State the name and location of peopleresponsible for health and safety in theworkplace

PC4. • Identify employability skills required for jobs in various industries.&Identify and explore learning and
• employability portals

PC5. • Recognize the significance of constitutional values, including civic rights and duties, citizenship,
• responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and
• respecting others, etc.

PC6. • Follow environmentally sustainable practices.&Recognize the significance of 21st Century Skills for
• employment

PC7. • Practice the 21st Century Skills such as Self-Awareness, Behavior Skills, time management, critical and
• adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional
• awareness, learning to learn for continuous learning etc. in personal and professional life

PC8. Use basic English for everyday conversation in different contexts, in person and over the telephone.

PC9. How to Minimize the team conflicts&Explain Ethics & values

PC10. Read and understand routine information, notes, instructions, mails, letters etc. written in English

PC11. • Write short messages, notes, letters, e-mails etc. in English & Understand the difference between job
• and career

PC12. • Prepare a career development plan with short- and long-term goals, based on aptitude &Discuss the
• main types of electronic funds transfers

PC13. • Follow verbal and non-verbal communication etiquette and active listening techniques in various settings
• & work collaboratively with others in a team

PC14. • Communicate and behave appropriately with all genders and PwD& escalate any issues related to sexual
• harassment at workplace according to POSH Act.

PC15. • Select financial institutions, products and services as per requirement & carry out offline and online
• financial transactions, safely and securely.

PC16. • Identify common components of salary and compute income, expenses, taxes, investments etc& identify
• relevant rights and laws and use legal aids to fight against legal exploitation

PC17. • Operate digital devices and carry out basic internet operations securely and safely & use e-mail and
• social media platforms and virtual collaboration tools to work effectively

PC18. Use basic features of word processor, spreadsheets, and presentations.

PC19. • Identify different types of Entrepreneurship and Enterprises and assess opportunities for potential
• business through research & develop a business plan and a work model, considering the 4Ps of
• Marketing Product, Price, Place andPromotion.

PC20. • Identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential
• business opportunity

PC21. • Identify different types of customers & identify and respond to customer requests and needs in a
• professional manner.

PC22. Follow appropriate hygiene and grooming standards

PC23. • Create a professional Curriculum vitae (Résumé) & search for suitable jobs using reliable offline and
• online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals,
• respectively

PC24. • Apply to identified job openings using offline /online methods as per requirement & answer questions
• politely, with clarity and confidence, during recruitment and selection

PC25. identify apprenticeship opportunities and register for it as per guidelines and requirements

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
MSME/ES/02 Employability skills	**100**	**-**	**-**	**-**
PC1. Explain occupational health and Safety.	-	-	-	-
PC2. Explain about safety rules.	-	-	-	-
PC3. State the name and location of peopleresponsible for health and safety in theworkplace	-	-	-	-
PC4. • Identify employability skills required for jobs in various industries.&Identify and explore learning and • employability portals	-	-	-	-
PC5. • Recognize the significance of constitutional values, including civic rights and duties, citizenship, • responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and • respecting others, etc.	-	-	-	-
PC6. • Follow environmentally sustainable practices.&Recognize the significance of 21st Century Skills for • employment	-	-	-	-
PC7. • Practice the 21st Century Skills such as Self-Awareness, Behavior Skills, time management, critical and • adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional • awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
PC8. Use basic English for everyday conversation in different contexts, in person and over the telephone.	-	-	-	-
PC9. How to Minimize the team conflicts&Explain Ethics & values	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. Read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC11. • Write short messages, notes, letters, e-mails etc. in English & Understand the difference between job • and career	-	-	-	-
PC12. • Prepare a career development plan with short- and long-term goals, based on aptitude &Discuss the • main types of electronic funds transfers	-	-	-	-
PC13. • Follow verbal and non-verbal communication etiquette and active listening techniques in various settings • & work collaboratively with others in a team	-	-	-	-
PC14. • Communicate and behave appropriately with all genders and PwD& escalate any issues related to sexual • harassment at workplace according to POSH Act.	-	-	-	-
PC15. • Select financial institutions, products and services as per requirement & carry out offline and online • financial transactions, safely and securely.	-	-	-	-
PC16. • Identify common components of salary and compute income, expenses, taxes, investments etc& identify • relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
PC17. • Operate digital devices and carry out basic internet operations securely and safely & use e- mail and • social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC18. Use basic features of word processor, spreadsheets, and presentations.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC19. • Identify different types of Entrepreneurship and Enterprises and assess opportunities for potential • business through research & develop a business plan and a work model, considering the 4Ps of • Marketing Product, Price, Place andPromotion.	-	-	-	-
PC20. • Identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential • business opportunity	-	-	-	-
PC21. • Identify different types of customers & identify and respond to customer requests and needs in a • professional manner.	-	-	-	-
PC22. Follow appropriate hygiene and grooming standards	-	-	-	-
PC23. • Create a professional Curriculum vitae (Résumé) & search for suitable jobs using reliable offline and • online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, • respectively	-	-	-	-
PC24. • Apply to identified job openings using offline /online methods as per requirement & answer questions • politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC25. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	**100**	**-**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	MSME/CSC/N0405
NOS Name	Employability skills
Sector	Capital Goods
Sub-Sector	
Occupation	PROGRAMMING
NSQF Level	4.5
Credits	2
Version	1.0
Last Reviewed Date	30/04/2024
Next Review Date	30/04/2027
NSQC Clearance Date	30/04/2024

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

As per QP

Minimum Aggregate Passing % at QP Level : 40

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Minimum Passing % at NOS Level: 40

(**Please note**: A Trainee must score the minimum percentage for each NOS separately as well as on the QP as a whole.)

Assessment Weightage

Compulsory NOS

Qualification Pack

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
MSME/CSC/N0404.Check and Inspect dimensions of machined Part using various Measuring instrument	0	100	0	0	100	10
MSME/CSC/N0403.Create, Generate and Execute CNC Program for Manufacturing Process	0	100	0	0	100	60
MSME/CSC/N0402.Read, Interpret and Create Part Drawing using Auto-CAD	0	100	0	0	100	10
MSME/CSC/N0401.Understand the Concept of Production Process	100	0	0	0	100	10
MSME/CSC/N0405.Employability skills	100	0	0	0	100	10
Total	**200**	**300**	**-**	**-**	**500**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.